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on Medical School Applicants and Enrollees

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Verbal Participation and Outcomes

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The Physician's Assistant Profession: Results of a 1978 Survey of Graduates

Henry B. Perry, M.D., Ph.D., and Donald W. Fisher, Ph.D.

Abstract—The authors describe the major findings of a 1978 national survey of 4,500 physician's assistants. Seventy-four percent of the respondents were working in primary care specialties, and two-thirds were located primarily in institutions rather than private practice settings. Almost half (47 percent) of the respondents were working in communities of fewer than 50,000 persons. Physician's assistants were more likely than physicians to be working in nonurban areas. The average income of a physician's assistant in 1978 was \$17,611, and there was little variation by major specialty or practice-setting categories. Since 1974 there appeared to have been a shift within the profession toward employment in family practice, in institutional settings, and in urban areas. There also had been a notable increase in numbers of women, persons with more extensive educational backgrounds, and persons with civilian allied health backgrounds in the physician's assistant profession.

One of the most significant developments in the practice of medicine in the 1970s was the widespread recognition that appropriately trained non-physicians can, with physician supervision, perform many tasks traditionally carried out by physicians and, in addition, diagnose and treat most problems commonly encountered in primary care settings with no discernible deterioration in the quality of care provided (1-4). Because of a recognized need for additional primary care manpower in many areas of the United States, federal

funding incentives during the past decade helped to stimulate the establishment of 198 nurse practitioner programs and 53 physician's assistant programs (5). Currently, there are an estimated 14,700 nurse practitioner program graduates and 10,900 physician's assistant program graduates. At least in the near future, there will continue to be approximately 2,000 nurse practitioners and 1,500 physician's assistants completing training programs annually (6).

Because of the rapid growth of the physician's assistant profession, the changing medical practice environments which graduates are encountering, and the continued national interest in physician's assistants as an important component of health manpower policy formulations, it is desirable to maintain current information for the profession as a whole. Recognizing the need to develop and maintain current information for the physician's assistant

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profession, the Association of Physician Assistant Programs in 1978 conducted a national survey of graduates from its member programs. This report describes some of the major findings of that study.

Method

In 1976 the Association of Physician Assistant Programs (APAP) surveyed the 4,963 graduates of member programs and received responses from 70 percent (3,494). In 1978 these same graduates received a "computer update" questionnaire, and responses were obtained from 73 percent. In addition, the 3,688 physician's assistants who had graduated between 1976 and 1978 also received questionnaires for the first time, and a response rate of 51 percent was obtained. The overall response rate for all graduates surveyed was 63 percent. The responses of these 4,500 graduates form the basis of this report. Approximately one-fifth of the respondents were not working in practice settings because they were involved in research or administrative activities, obtaining further education or training, or had left the profession. Consequently, the number of responses for the table describing the professional activities of the 1978 graduates is considerably less than 4,500.

In order to analyze geographic location more carefully, a 10 percent random sample of civilian physician's assistants was selected. The county location was determined for each of these individuals. A comparison of the major study variables for this 10 percent random sample with those for the entire study population yielded no significant differences. Primary health care manpower shortage area code designations for those counties in which physician's assistants were located were obtained from the Division of Health Professions Analysis, Department of Health and Human Services.

Findings

The average age at graduation from physician's assistant training was 28.5 years. The average age of respondents at the time of the survey was 32.5 years. Women constituted 30.6 percent of the graduates. Forty-five percent of the respondents had graduated from college prior to beginning physician's assistant training. Respondents had worked an average of eight years in a medical field before entering a physician's assistant program.

The most common occupational background was that of military medical corpsman, reported by 42 percent of the respondents. Twenty percent of the respondents had been health technicians or technologists, and 13 percent had been registered nurses. Those with backgrounds in other medical fields (13 percent) and those with no prior medical background (12 percent) made up the remainder of the respondents.

Thirteen percent of the respondents attended a MEDEX program, and 13 percent attended a military sponsored program. One quarter (25 percent) attended a non-MEDEX civilian program based in a medical center without a medical school. Almost half (44 percent) attended a program based in a medical center with a medical school. The remainder (5 percent) qualified to take the certification examination for physician's assistants but did not attend a formal program.

PROFESSIONAL ACTIVITIES

The specialties of physician's assistants are shown in Table 1. Three-quarters of the respondents were working in primary care fields, and two-thirds of those working in primary care were in family practice. Surgical specialties employed 12 percent of the respondents; medical subspecialties, 6 percent; and other specialties, 8 percent.

Approximately one-third of the respondents were working principally in private

TABLE 1
Specialties of 3,416 Physician's Assistants Re-
sponding to 1978 Survey

Specialty	Percent
Primary Care	
Family/general practice	52.0
General internal medicine	12.0
Emergency medicine	4.9
General pediatrics	3.4
Obstetrics and gynecology	1.9
Subtotal	74.2
Medical	
Cardiology	2.5
Allergy	1.1
Dermatology	0.7
Endocrinology	0.5
Gastroenterology	0.4
Hematology	0.4
Pulmonary medicine	0.3
Infectious diseases	0.2
Neurology	0.2
Subtotal	6.3
Surgical	
General surgery	5.5
Orthopedic surgery	2.4
Thoracic and cardiovascular surgery	1.6
Urology	1.0
Neurosurgery	0.7
Plastic surgery	0.3
Otolaryngology	0.1
Ophthalmology	0.1
Subtotal	11.7
Other	
Industrial and occupational medicine	2.7
Psychiatry	1.4
Public health and preventive medicine	0.6
Physical rehabilitation medicine	0.4
Radiology	0.3
Anesthesiology	0.2
Other	2.2
Subtotal	7.8

practice settings, almost equally divided between solo (18 percent) and group practice (17 percent). Almost a quarter (24 percent) were working primarily in hospital settings (including both inpatient and/or outpatient settings). Another quarter (23 percent) were working primarily in non-hospital clinic settings. Finally, about one fifth (18 percent) of the respondents were employed by the military. An estimated 30 percent of the respondents

worked at least part-time in a government medical facility, and 15 percent worked in a satellite or remote clinic where a physician was not present a majority of the time.

Seventy-four percent of the respondents were involved in in-hospital activities at least part-time, and 59 percent had obtained formal hospital privileges. Among those working at least part-time in a hospital setting, one-third spent most of their time with inpatients. Another quarter spent most of their time in the emergency room, while one-fifth spent most of their time in the outpatient clinic. Ten percent spent most of their time in the operating room, and 7 percent spent most of their time elsewhere in the hospital.

Physician's assistants worked an average of 45.6 hours per week during regular working hours. Thirty-seven of these hours were devoted to direct patient care. In addition, respondents reported that they were on call an average of 37 additional hours per week as well.

GEOGRAPHIC DISTRIBUTION

The regional distribution of physician's assistants and the distribution of the U.S. population were found to be virtually identical. The distribution of physician's assistants by state and their per capita concentration by state were computed. On the basis of the 1978 survey findings, California had the largest number of physician's assistants (362) followed by New York (304). Alaska had the highest per capita concentration of physician's assistants (108 per million population) followed by the District of Columbia, New Mexico, Vermont, and Kansas (each with about 50 physician's assistants per million population). Illinois and New Jersey had the lowest per capita concentration (fewer than three physician's assistants per million population).

Twenty-five percent of the civilian re-

spondents involved in patient care were working in communities of less than 10,000 persons and 22 percent were in communities of 10,000 to 50,000 persons. The geographic distribution by county size was computed for a 10 percent random sample of civilian respondents and compared with the county distribution of U.S. physicians and the general population. These results are described in Table 2.

Physician's assistants were considerably more likely than physicians to be working in nonmetropolitan counties. While physicians were skewed relative to the U.S. population toward urban locations, physician's assistants were slightly skewed toward nonurban areas compared with the general population.

The 1978 classification for the Department of Health, Education, and Welfare was determined for each of the counties in which the physician's assistants in the 10-percent random sample were working. One-third of the sample (32 percent) were working in counties without a primary health manpower shortage. Almost two-thirds (59 percent) were working in counties in which a segment had been declared a shortage area. The remainder (9 percent) were working in counties in which the

entire area had been declared to possess a shortage of primary care manpower. Whether the physician's assistants in the second group were actually working in the segment of the county with the primary health care manpower shortage could not be determined from the available data.

INCOME

The average income for physician's assistants in 1978 was \$17,611. Differences in income by major specialty categories (that is, the major specialty headings shown in Table 1) were not statistically significant. Differences in income by major practice settings were also not statistically significant. Tests of statistical significance were performed using one-way analysis of variance techniques.

The average incomes in 1978 for physician's assistants with different levels of experience is shown in Table 3. There appears to be an average increment of \$1,000 in income associated with each additional year of experience up to four years of experience. Among those with nine or more years of experience as a physician's assistant, the average income continues to increase, although the number of cases is quite small. It should be stressed that these

TABLE 2
Comparison of County Distribution of a 10-Percent Sample of 1978 Civilian Physician's Assistants with the County Distribution of U.S. Non-Federal Physicians and the U. S. Population by Percentages†

County	U.S. Population (n = 214,000,000)	Physician's Assistants (n = 305)	Non-Federal Physicians (n = 370,000)
Nonmetropolitan counties with less than 50,000 inhabitants	16.8	22.0	6.9
Nonmetropolitan counties with over 50,000 inhabitants	10.0	9.5	6.7
Counties in SMSAs with up to one million inhabitants*	31.4	38.0	30.7
Counties in SMSAs with over one million inhabitants*	41.8	30.5	55.7

* SMSA refers to Standard Metropolitan Statistical Area.

† Source of distribution data is Goodman (reference 7).

TABLE 3
1978 Mean Income of Responding Physician's
Assistants by Number of Years Since Comple-
tion of Training

Years Since Training	No.	Income (In Dollars)
1	947	15,744
2	860	16,800
3	767	17,900
4	534	19,300
5	345	19,400
6	127	20,800
7	29	19,900
8	16	21,400
9 or more	28	24,065

are cross-sectional data and may not be applicable in predicting future career earnings for physician's assistants.

Discussion

In comparing these findings for the physician's assistant profession in 1978 with those previously reported for a profession-wide survey in 1974 (8), several themes become apparent. First of all, there continued to be a strong emphasis upon primary care. Three-quarters of the graduates in 1978, as previously, were working in primary care fields. Within primary care fields, however, there was a notable trend toward family practice and away from general internal medicine. Forty-four percent of the graduates in 1974 compared with 52 percent of the graduates in 1978 were working in family practice. Nineteen percent of the graduates in 1974 were working in general internal medicine compared with 12 percent in 1978.

There appears to be a rather significant trend toward working primarily in institutional rather than in private practice settings. Fifty percent of the graduates in 1974 were working primarily in private practice settings as compared with 35 percent in 1978. In contrast, the percentage of graduates working in institutional settings

rose from 50 percent in 1974 to 65 percent in 1978.

Physician's assistants were still more likely to be working in nonurban settings than physicians. Nevertheless, almost three-quarters were working within an SMSA (Standard Metropolitan Statistical Area). There appears to have been an overall modest shift recently toward urban location among physician's assistants. In 1974, 47 percent were working in communities with more than 50,000 persons, while in 1978, 54 percent were located in such areas. Nevertheless, two-thirds of the physician's assistants appear to be located in or adjacent to primary health care manpower shortage areas. A substantial proportion of the physician's assistant profession was still working in smaller communities where physician manpower shortages are greatest.

It is now widely recognized that there has been a major change in the backgrounds of individuals entering the physician's assistant profession. These findings confirm this impression. The proportion of former military medical corpsmen among graduates dropped from 55 percent in 1974 to 42 percent in 1978. Those with no prior medical background became relatively less common (22 percent in 1974, 11 percent in 1978). There was a compensatory increase in representation of individuals with prior backgrounds as medical technologists or technicians, nurses, or employees in other allied health fields. The overall proportion of women doubled from 16 percent in 1974 to 31 percent in 1978. There also was an increase in the educational preparation of individuals prior to entering physician's assistant training. Between 1974 and 1978, the percentage of physician's assistants who had previously completed four years of college rose from 32 percent to 45 percent.

Although the number of physician's as-

sistants in the United States remains quite small relative to the numbers of physicians and nurses, their contribution in enhancing physician productivity, expanding access to primary care, and providing high quality patient care at lower cost is gaining recognition (9, 10). Unfortunately, the forecast of an impending surplus of physicians (11) and anticipated major cutbacks in federal support for physician's assistant training have dampened in some respects the immediate future for the physician's assistant profession. It thus appears likely there may be a reduction in the numbers of physician's assistants being trained.

Nevertheless, it also is likely that there will continue to be a strong demand for employment of physician's assistants within the United States because of their capacity to provide patient care efficiently and effectively. Beyond primary care, there is a growing interest in the role of the physician's assistant in surgery (12), emergency medicine, and other fields. Because of the current overproduction of surgeons and medical subspecialists, there are major potential areas of new utilization for physician's assistants as replacements for junior level residents in these specialties. There are also major opportunities for employment of physician's assistants as junior house officers in institutions heavily dependent upon foreign medical graduates or in community hospitals without residency training programs (13). A continuing expansion of the role of institutional providers, including health maintenance organizations, in providing primary care should also contribute to an ongoing demand for physician's assistants because of the financial savings associated with physician manpower substitution in such settings (10). Finally, even in the face of a possible surplus of physicians, there will continue to be pockets of physician short-

ages in rural and inner-city areas where non-physicians will be needed to provide primary care.

In the long run, there are potential benefits which might accrue from an eventual reduction in medical school output and an expansion of the production of physician's assistants and other non-physician health practitioners (such as nurse-midwives and nurse practitioners). Health care perhaps could be provided just as effectively at a considerably lower cost, investments in medical training could be less, and services might be more widely distributed.

The development of the physician's assistant profession during the 15 years since its inception has been of great significance for medical practice. The active support of the medical profession has been one important factor contributing to its success to date. The incorporation of the physician's assistant concept on a broader scale still remains feasible, but it will not be practical unless the current levels of training of physicians has been reduced substantially. The potential benefits of widespread utilization of new health practitioners, including physician's assistants, should be given careful consideration by those concerned with long-range health policy. Physician's assistants have proven to be capable and enthusiastic members of the health care team. For this reason, their role in health care should continue to grow.

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DATAGRAM

Sources of Construction Funds in Teaching Hospitals, 1979

Since 1969 the Association of American Medical Colleges has periodically published information on sources of hospital construction funding for the Council of Teaching Hospitals' nonfederal member hospitals. The data were compiled from the American Hospital Association's annual surveys on the sources of funding for hospital construction. Table 1 and Figure 1 present trends in construction funding for COTH nonfederal members from 1969 to 1979. It should be noted that these data are for construction completed in 1969 and for construction begun in 1974 and 1979. Table 2 provides a detailed comparison of the funding sources of (a) COTH nonfederal governmental hospitals, which consist of state, county, city, and hospital district facilities; (b) COTH voluntary hospitals, which are church-operated and other, nonprofit hospitals; and (c) all U.S. nonfederal short-term hospitals, which include the COTH nonfederal member hospitals.

As shown in Table 1, \$284 million was spent on capital construction projects in 1969 by 126 responding nonfederal COTH hospitals. At that time, the major source of funding for construction was hospital internal operations

(\$76 million), followed by state and local government grants and appropriations (\$69 million) and borrowing (\$58 million).

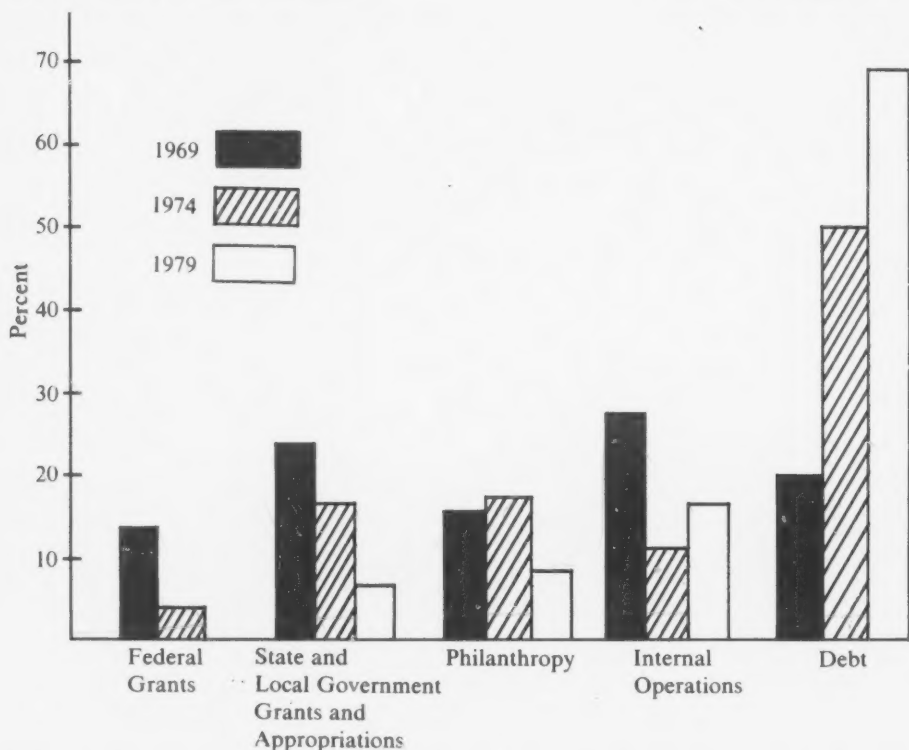
During 1979, 123 responding COTH members began construction projects expected to total \$764 million. When adjusted for inflation, this figure is equivalent to \$317 million in 1969 dollars. In 1979, 68 percent of the construction funds came from borrowing or debt financing contrasted to 20 percent in 1969. The second major source of funds in 1979 was hospital internal operations, which generated \$131 million. Though this figure appears to be a sharp increase from the \$76 million contribution in 1969, it represents only \$54 million in 1969 dollars. This financing mechanism actually fell in terms of "real" inflation-adjusted dollars and as a percentage of the total, from 27 percent in 1969 to 17 percent in 1979. Similarly, philanthropy, the third largest contributor of dollars for construction projects in 1979, increased in absolute dollars from \$44 million in 1969 to \$60 million in 1979. However, when adjusted for inflation, it actually decreased to \$25 million in 1969 constant dollars. Philanthropy accounted for 16 percent of total funds in 1969

TABLE 1
Funding of Construction Projects in COTH Nonfederal Institutions, 1969, 1974, 1979*

Funding Sources	In Current Dollars (millions)			In Constant (1969) Dollars† (millions)			Percentage of Total		
	1969 (n=126)	1974 (n=83)	1979 (n=123)	1969 (n=126)	1974 (n=83)	1979 (n=123)	1969 (n=126)	1974 (n=83)	1979 (n=123)
Federal grants	\$ 37	\$ 28	\$ <1	\$ 37	\$ 18	\$ <1	13	4	0
State and local grants and appropriations	69	109	51	69	71	21	24	17	7
Philanthropy	44	118	60	44	77	25	16	18	8
Internal operations	76	72	131	76	47	54	27	11	17
Debt	58	328	522	58	214	217	20	50	68
Total	\$284	\$655	\$764	\$284	\$427	\$317	100	100	100

* Source: American Hospital Association's Survey of the Sources of Funding for Hospital Construction, 1969, 1974, and 1979. For 1969, the data reported relate to total funds for construction projects completed in 1969. For 1974 and 1979, the data reflect expected total funds for construction projects begun in those years.

† Source: U.S. Department of Commerce Composite Construction Cost Index. Base period 1972=100; 1969=82.7; 1974=126.9; and 1979=199.6.



SOURCE: American Hospital Association's Survey of the Sources of Funding for Hospital Construction, 1969, 1974, and 1979.

FIGURE 1

Sources of construction funds for COTH nonfederal hospitals, 1969, 1974, 1979.

and 8 percent in 1979. State and local government grants and appropriations also decreased between 1969 and 1979, both in dollar amount and percentage of total construction funds. The 1979 contribution of \$51 million (7 percent of total construction funds) is equivalent to \$21 million in 1969 constant dollars, a more than three-fold reduction in constant dollars from the \$69 million (24 percent of the total construction funds) received from this source in 1969. A marked change during the past 10 years has been the decreasing reliance on federal grants as a financing mechanism. In contrast to federal grants totaling \$37 million in 1969, the 1979 contribution fell dramatically to \$29,000.

Table 2 presents the sources of construction funds in more detail and by type of hospital. For all hospital groups, state and local tax-exempt bonds were the primary financing mechanisms in 1979. COTH voluntary hospitals were most dependent (59.7 percent) on this source for construction funds; for all nonfederal short-term hospitals and COTH nonfederal governmental hospitals, it provided 49.7 percent and 46.0 percent of the total construction dollars respectively.

Two other sources of construction funds were important to COTH nonfederal government hospitals: state and local government grants and appropriations, representing 22.9 percent of total funding, and earnings gener-

TABLE 2
Percentage of Construction Funds for COTH Nonfederal Hospitals and All
Nonfederal Short-Term Hospitals, 1979*

Funding Sources	COTH Non- federal Gov- ernmental Hospitals (n=22)†	COTH Voluntary Hospitals (n=101)†	All U.S. Nonfederal Short-Term Hospitals‡ (n=1006)†
Government			
Federal grants	0.1	0.0	0.3
State and local grants and appropri- ations	22.9	3.0	3.0
Philanthropy			
Fund raising	0.7	6.2	3.1
Other contributions	0.1	1.8	1.3
Foundation grants	0.0	1.3	1.0
Internal Operations	20.9	16.2	20.3
Debt			
Loans	0.0	1.8	3.9
Taxable bonds	0.0	0.0	2.5
Tax-exempt bonds/state and local	46.0	59.7	49.7
Tax-exempt bonds/IRS	0.0	4.7	6.3
HUD	0.0	0.0	1.3
Hill-Burton	0.0	0.0	0.2
Interest on construction funds	1.4	4.8	3.9
Other	7.9	0.5	3.2

* Source: American Hospital Association's Survey of the Sources of Funding for Hospital Construction, 1979.

† Total funds reported for COTH nonfederal government hospitals—\$139,581,406; for COTH voluntary hospitals—\$623,565,375; for all U.S. nonfederal short-term hospitals—\$3,762,297,500.

‡ Including COTH nonfederal hospitals.

ated by hospital operations, 20.9 percent. COTH voluntary hospitals received very little support from state and local government grants and appropriations (3.0 percent) but did use internal operations' earnings as a significant source of funding (16.2 percent). Finally, taxable bonds, Department of Housing and Urban Development loans, and Hill-Burton monies did not contribute to the sources of funding for construction at any of the responding COTH-member hospitals but provided 4.0 percent of the total funds at all nonfederal short-term hospitals.

In summary, the pattern of financing hospi-

tal construction in COTH institutions shifted dramatically during the past decade. The most striking change was in the use of debt financing, which grew from 20 percent of the total construction funds in 1969 to 68 percent in 1979, making contributions from other financing sources relatively less significant. When adjusted for inflation, total construction funds did not increase substantially in "real" dollars from 1969 to 1979.

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